

He has worked for many years with phase transformation and age-hardening mechanisms of dental gold alloys. His research interests include physical and mechanical properties of dental precious metal alloys and materials characterization using thermal analysis, X-ray diffraction and nano-indentation techniques.

Yasuhiro Tanaka is a research associate of the Department of Dental Materials Science. He was awarded Master of Engineering degree by Kyushu University in 1988. He has worked for over 13 years with physical and mechanical properties of dental alloys. His main subjects include development of metal-based functional materials and materials characterization using analytical and high-resolution transmission electron microscopy.

Eri Miura is a research associate of the Department of Dental Materials Science. She was awarded her PhD degree in 1999 by Tohoku University, Sendai, Japan. Her experiences include plastic deformation behaviour of solid solutions and materials characterization using X-ray diffraction and scanning and transmission electron microscopy.

Yasuko Takuma is a technician of Nagasaki University School of Dentistry. She has worked for

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BOOK REVIEW

Cyanide: Social, Industrial and Economic Aspects

Ed by Courtney A Young, Larry G Tidwell and Corby G Anderson, The Minerals, Metals and Materials Society, Warrendale, Pa, USA, 2001, 582 pages, ISBN 0-87339-479-8, Price \$120.00

This book collects together 43 papers which were presented at a conference with the above title. Following standard refereeing procedures the papers were published in the book under review and then the conference was held in New Orleans from 12 - 15 February 2001. The editors claim that all the desired subject matter was covered to some degree.

Cyanide management technologies have been greatly improved and new technologies are being implemented and developed, including analysis and control. An understanding of cyanide physico-chemical properties under different conditions (*eg* pH, redox potential, temperature, pressure) is essential for the safe measurement of cyanide.

Use of cyanide by the mining industry has become a target of some environmental groups and, for example, the State of Montana in the USA now prohibits use of cyanide for heap and vat leaching of gold and silver ores mined by open-pit methods. Active consideration is therefore being given to alternative reagents in order to gain public consent.

Most of the papers in this volume describe some aspect of cyanide

technology, but there are others describing use of thiosulfate and other alternative lixivants, *eg* halide and nitrogen species. There is certainly a wealth of information for readers wishing to assess the pros and cons of new approaches to the use of cyanide and alternatives.

The book is divided into the following sections: 'Politics and Spills' (10 papers), 'Analysis and Control' (6), 'Cyanide Management' (20), 'Alternatives' (7); and there is an Addendum containing three more cyanide papers, one of which is by AngloGold authors. There is an Author Index and a small but useful Subject Index.

David T Thompson